millimeter classes showing the frequencies 1, 6, 5, 8, 4, 5, 2, 1, is grouped in a ratio of 7 wide : 17 medium : 8 narrow or nearly the expected 1:2:1. Every variation curve of purely chance variates can be arranged in this way by counting one-fourth of all the variates from each extreme, leaving the group between the quartiles as the 50 per cent. intermediates expected.

The author reaffirms in a general statement the explanation offered in his first paper,[19] to account for the appearance of certain *nova;* but makes an interesting observation in disagreement with that explanation, apparently without noting the discrepancy—the new character of the pigmented parent which was changed to the active state by crossing. He now states that he could occasionally observe the mottled pattern like a faint water mark in the *white* parent, and its occurrence there makes this an excellent new evidence that the mottled character is not latent in the usual sense of being *inactive*, and that it is *not* present in the pigmented parent, but being possessed by the *white* parent is simply *invisible* owing to the lack of pigment.—GEORGE H. SHULL.

**Spraying potatoes.**—STEWART, EUSTACE, and SIRRINE[20] have published the extensive results secured by them during 1904 in their series of experiments in the prevention of potato diseases by spraying. The results secured during previous years should be read in this connection.[21] During 1904 a total of fifty-eight experiments were conducted; a few of these were upon the grounds of the Experiment Station at Geneva, while the remainder were conducted as "farmers' business experiments" in various parts of the state. The experiments at Geneva form a part of a ten-year series of experiments designed to give average results for various seasons. The other experiments should yield valuable data year after year as to the actual net gains to be expected from the spraying against potato diseases under actual farm conditions. At Geneva five sprayings increased the yield 233 bushels per acre, while a gain of 191 bushels was secured from three sprayings. This gain was mostly due to the longer growth of the plants made possible by the prevention of the late blight and the rot which follows it. In the business experiments, covering a total of 180 acres, the net gain per acre due to spraying was $24.86. The average loss from blight in New York State during 1904 was not less than 60 bushels per acre. The suggestion is made that the community hire some person to do all their spraying, thus effecting a saving of time and labor.—E. MEAD WILCOX.

**Alternation of generations in Phaeophyceae.**—Strasburger[22] agrees with OLTMANNS that there is no alternation of generations in the Phaeosporeae. He

[19] See BOT. GAZETTE **39**:303–304. 1905.

[20] STEWART, F. C., EUSTACE, H. J., and SIRRINE, F. A., Potato spraying experiments in 1904. Bull. N. Y. Geneva Exp. Stat. 264:93–204. *pls. 1–16. 1 map.* 1905.

[21] Potato spraying experiments in 1902. Bull. N. Y. Geneva Exp. Stat. 221: 235–263. 1902.

Potato spraying experiments in 1903. Bull. N. Y. Geneva Exp. Stat. 241. 1903.

[22] STRASBURGER, EDWARD, Zur Frage eines Generationswechsels bei Phaeophyceen. Bot. Zeit. **64**:1–7. 1906.

believes that here, and also in the Chlorophyceae, the germination of the zygote will be found to be accompanied by a reduction of chromosomes, and that consequently a diploid, or *2x* generation cannot be present. The absence of a diploid generation explains why parthenogenesis occurs so readily. Forms like the Dictyotaceae, which have a diploid generation, must be widely separated phylogenetically from the Phaeosporeae. The thallus of the Fucaceae is diploid, while from the initials of oogonia and antheridia to the mature eggs and sperms the condition is haploid, or gametophytic. The rather surprising view is expressed that the antheridia and oogonia of the Fucaceae are not homologous with those of the Dictyotaceae, but that they correspond rather to the tetraspore condition of the latter group. STRASBURGER makes the statement that the gametophytic generation begins with the complete separation of the *2x* (*doppelzahligen*) chromosomes, because this separation furnishes the condition for the formation of sexual products. He does not indicate any more definitely that he would regard the spore rather than the spore mother-cell as the first term of the gametophyte.—CHARLES J. CHAMBERLAIN.

**Diseases of sugar cane.**—LEWTON-BRAIN finds that the root-disease of the sugar cane in Hawaii[23] is probably due to the fungus *Marasmius sacchari*, known to cause a similar disease in other countries. In Hawaii the fruiting body of the fungus has not yet been found. The Yellow Caledonia variety seems to be resistant to the disease while the Lahaina and Rose Bamboo are most severely injured. Ratoons are more injured than plant canes. Since this fungus is a soil-infesting fungus it may be controlled by liming the soil and through cultivation.

COBB[11] has recently published suggestions as to the inspection and disinfection of sugar cane cuttings to prevent the spread of sugar cane diseases.[24] The cuttings should be made with care to prevent the shattering of the ends, which permits the entrance of fungus parasites, and they should then be carefully inspected to get rid of any diseased ones that may be present. "Pickling" the cuttings in Bordeaux mixture is recommended, and a large part of the paper is devoted to methods of doing this work on the large scale required on a sugar plantation. The cuttings may also be sprayed with Bordeaux mixture in the ditch just before being covered.—E. MEAD WILCOX.

**Asparagus rust.**—SMITH, as a result of his further studies of the asparagus rust problem on the Pacific coast, finds that the rust may be effectively controlled or entirely prevented by the proper application of a dust spray of flowers of sulfur.[25]

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[23] LEWTON-BRAIN, L., Preliminary notes on root disease of sugar cane in Hawaii. Div. Path. and Phys. Exp. Stat. Hawaiian Sugar Planters' Association Bull. 2:1–39. *figs. 12.* 1905.

[24] COBB, N. A., The inspection and disinfection of cane cuttings. Div. Path. and Phys. Exp. Stat. of the Hawaiian Sugar Planters' Association Bull. 1:1–35, *pls. 8.* 1905.

[25] SMITH, R. E., Further experience in asparagus rust control. Calif. Exp. Stat. Bull. 172:1–21. *figs. 7.* 1906.